


BMJ Open Medication safety problems priorities in community pharmacy in Saudi Arabia: a multi-stakeholder Delphi study using the human factors framework

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ABSTRACT

Aim To achieve multi-stakeholder consensus and prioritisation of medication safety problems in community pharmacies in Saudi Arabia.

Design and intervention A theoretically-underpinned, three-round Delphi study.

Setting Saudi Arabia.

Participants Patients and public (pharmacy users), pharmacy-related professionals (policymakers, academics, medication safety officers and pharmacy owners) and community pharmacists.

Methods Round 1 comprised 84 statements derived from a qualitative study. The items were grouped according to the Human Factors Framework (HFF). Rounds 1 and 2 aimed to achieve consensus, 6-point Likert response scale (agreement/disagreement) was used. Round 3 aimed to prioritise the items for which consensus was achieved in Rounds 1 and 2 indicated on a 5-point scale (very important to unimportant). Consensus was predefined as any item that achieved ≥70%.

Results The number of respondents in Rounds 1, 2 and 3 was 161, 120 and 112, respectively. In all three rounds, the majority of respondents were pharmacy users (Round 1 77% (n=124), Round 2 74% (n=89), Round 3 72% (n=81)). Consensus was achieved with 28/84 items. The top five medication safety priorities were: lack of pharmacy facilities such as counselling area, lack of communication between pharmacists and physicians, lack of patient databases, lack of post-registration pharmacist education and pharmacists' long working hours. The professional and pharmacy user groups achieved consensus on similar items through different categories of the HFFs. Community pharmacists had the highest percentage of consensus among the three groups for factors related to work, such as high workload and low salaries.

Conclusion This multi-stakeholder study used the HFF to identify and prioritise the main medication safety challenges facing community pharmacy in Saudi Arabia. It indicates the need for changes to practice and policy and further research to address these priorities and promote medication safety at an individual, pharmacy and population level.

INTRODUCTION

Community pharmacy is a complex system involving many interacting factors that

Strengths and limitations of this study

- It involved representatives of various stakeholders of community pharmacy including the public.
- The use of the HumanFactors Framework to categorise and prioritise medication safety problems equates to a universal language that can be understood in different healthcare disciplines and beyond the healthcare field.
- Online surveys may be subject to selection bias.
- A high percentage of pharmacy users chose 'I do not know' in Round 1 and 2.
- There was unequal representation from the three stakeholder groups in each of the three rounds.

influence medication safety.^{1–4} Medication safety is defined as 'freedom from accidental injury during the course of medication use; activities to avoid, prevent or correct adverse drug events, which may result from the use of medications'.⁵

In Saudi Arabia, community pharmacies continue to be product-oriented, despite the introduction of a patient-oriented model in the early 1970s.⁶ In 2018 the Saudi Ministry of Health (MOH) started to enforce regulations about the supply of antibiotics without prescription with financial penalties of up to £21 000, loss of pharmacy license and possible imprisonment for up to 6 months for pharmacists who violated this legislation.⁷ In 2019 the MOH launched an initiative to upgrade health services called 'Wasfati'. It allows the beneficiaries of free governmental health services (primary or secondary) to obtain medicines from the community pharmacy (private) closest to them at the right time and free of charge, instead of only from the outpatient pharmacy in the governmental hospitals as happened previously.⁸ While this initiative has created an opportunity to develop the community pharmacist role, it also generates medication safety concerns.¹ The main medication safety

problems identified in Saudi community pharmacy setting include commercial pressures, failure to enforce regulations, the fragmented healthcare system, self-medication with prescription-only medicines, inappropriate medication storage and excessive pharmacist workload.¹

In order to develop strategies and interventions to address these diverse challenges, there was a need to prioritise which medication safety problems should be addressed. The Delphi method serves as a virtual meeting with a diverse group of experts to communicate and provide opinions on a practice-related matter.⁹

Various theories and frameworks, including the Human Factors Framework (HFF), have been identified to explore factors influencing patient safety^{10–15} and aid understanding of people's strengths and weaknesses, allowing design of better systems.¹⁶ The HFF incorporates a number of factors associated with the occurrence of safety problems such as those related to patients, individuals, teamwork, the work environment, the task, as well as managerial, organisational and external factors. Evidence shows that the HFF is efficient in aiding the identification of factors and the design of systems to promote patient safety.¹⁶ The HFF incorporates a universal language that can be understood by all patient safety stakeholders. It enables research findings to be communicated to various disciplines and ensures an understanding of medication safety challenges in the community pharmacy context. Furthermore, this means that identified challenges to medication safety can be compared with similar difficulties experienced by other disciplines and mutual experiences can then be shared.

The aim of this study, therefore, was to adopt a theoretically-underpinned approach to derive consensus and prioritise medication safety problems in community pharmacy in Saudi Arabia.

METHODS

Study design

A three-round Delphi study was conducted with three stakeholder groups (pharmacy users, 'professionals' and community pharmacists). A web-based Delphi study (e-Delphi) and a paper questionnaire were used concurrently depending on participant preference.

Statement development

The medication safety items included in Round 1 were derived from the results of an earlier study.¹ A total of 119

statements was generated and categorised using the HFF (categories: external, organisational and management, work, physician, pharmacist, communication and information exchange, task, medication factors, patient behaviour and patient characteristics).

The Delphi items and response options were piloted with 15 individuals (five people from each of three groups; pharmacy users, professionals and community pharmacists). Their feedback indicated that the number of items was excessive. In addition, pharmacy users suggested adding an option 'I do not know' to the 5-point Likert scale. As a result of piloting, the total number of items was reduced to 84 statements (online supplementary table 1) (table 1).

Determining consensus

A 6-point Likert scale was used to rate the level of agreement/disagreement with each statement: strongly disagree, disagree, agree, strongly agree and 'I do not know'. Consensus was predefined as any item that reached $\geq 70\%$ agreement (ie, 4 or 5 on the Likert scale) or disagreement (ie, 1 or 2 on the Likert scale). The cut point of 70% was based on published recommendations.^{17–20} A systematic review that investigated how consensus is operationalised in Delphi studies found that the definitions of consensus vary widely with 75% being the median threshold to define consensus and the range is 50% to 97%.¹⁷

Participant identification and recruitment

The aim was to recruit 25 participants in each group; the recommended average Delphi study panel size is 10 to 30 members.^{9,21} Participants were identified through a number of sources. Saudi adult pharmacy users were recruited using a range of methods. The social network Twitter, was used to recruit Saudis from a wide geographical area. A URL link to the study was tweeted to invite Saudis aged 18 years and over to participate. Non-Saudi nationals and individuals under 18 years of age were excluded. To ensure maximum variation in age, education level and other demographics, a snowballing recruitment technique was used.²² Individuals who agreed to participate were asked to invite other individuals of a different gender, age or educational level either personally or by re-tweeting the study link.

The 'professional' group in this study were those working in organisations that regulate and monitor community pharmacies, pharmacists and medicine supply in Saudi Arabia (ie, policymakers, academics, medication safety officers and pharmacy owners).

Table 1 Participants' responses by group across all rounds

Questionnaires	Round 1		Round 2		Round 3	
	No. sent	Participants % (n)	No. sent	Participants % (n)	No. sent	Participants % (n)
Pharmacy users	284	43.6 (124)	119	74.7 (89)	119	68.0 (81)
Professionals	37	32.4 (12)	12	91.6 (11)	12	83.3 (10)
Community pharmacists	38	65.7 (25)	23	86 (20)	23	91.3 (21)
Total	359	44.8 (161)	154	79.2 (120)	154	72.7 (112)

The professionals were recruited purposively through professional and personal networks.

Community pharmacists working in Riyadh, for a minimum of 1 year were eligible to participate. It is worth noting that all community pharmacists in Saudi Arabia are male and the majority are non-Saudi. In Saudi there are 20 governmental colleges of pharmacy and the majority of the Saudi graduate works in hospitals. Thus, 99% of community pharmacists are non-Saudi, with Egyptians being the predominant nationals.^{23–31}

They were selected purposively for the study to achieve a mix of pharmacists from five areas in Riyadh (north, west, east, south and the centre) and different types of pharmacies, including independent, clinic-affiliated and chain pharmacies.

Pharmacy users, professionals, community pharmacists participated in a previous focus group study were also invited to participate.¹

All participants received the same invitation pack that included an invitation letter, a study information sheet and consent form. The invitations were followed by two reminders sent by email, WhatsApp or Twitter. The questionnaires were anonymised.

Patient and public involvement

Members of the public participated in this research, as they comprised one of the stakeholder groups. Members of the public were not invited to comment on the study design, were not consulted to develop patient relevant outcomes or interpret the results and were not invited to contribute to the writing or editing of this manuscript for readability or accuracy.

Round 1

Rounds 1 and 2 aimed to achieve consensus on medication safety problems. Round 1 of the questionnaire contained two parts. Part 1 listed the medication safety problems statements. A space at the end of the list was provided to encourage participants to note any other problems related to medication safety and for general comments. Part 2 captured demographic data including (for professional and community pharmacists) years of experience, educational background, professional role and country of residence.

Round 2

Round 2 also comprised two parts. Part 1 summarised all statements for which consensus was achieved in Round 1. These items were presented as feedback to participants and no further responses were required to these items. Part 2 contained all Round 1 items that did not achieve consensus (not included in Part 1 list). No changes were made to the items apart from adding the feedback from Round 1 as a percentage alongside each statement.

Round 3

The purpose of Round 3 was to prioritise the medication safety problems for which consensus was achieved in Rounds 1 or 2. The stem of each consensus statement was modified: instead of asking participants about agreement, participants were asked to rate the importance of each item

using a 5-point Likert scale, from 1 to 5: (1=very important to 5=unimportant). Participants were also asked under each category, 'What are the most important medication safety problems in this category?'

A pilot study was conducted for Round 3, the aim of which was to confirm whether participants understood the new stem question. Participants acknowledged the ease of the questionnaire. The average completion time for the Round 3 questionnaire was 20 min based on the pilot questionnaire.

Questionnaire administration

Each round was conducted over a maximum of 8 weeks: 3 weeks for response acquisition, and two reminders, as required, sent at 2 week intervals (figure 1). A closing date for each round was stated. Three weeks were set aside for analysing data and preparing for the subsequent round. The questionnaires were sent to all participants who completed Round 1, together with corresponding instructions for each round. After completing the questionnaire, participants were thanked and provided information about the next round. Participants were also asked about their preference for receiving the next round questionnaire, either by email or social media (WhatsApp or Twitter), which they could do confidentially and securely. To match the answers from participants across consecutive rounds, participants were asked to provide their mobile phone numbers as their unique identification number in all rounds. The questionnaire was developed in SurveyMonkey (SurveyMonkey Inc, San Mateo, California, USA) and its functioning pilot tested by the research team.

Data analysis

Data generated from the online version were extracted to Microsoft Excel for descriptive analysis (frequencies and percentages) to identify whether or not consensus had been obtained for each statement. Thematic analysis was performed on free text responses. The final ranking in Round 3 of the medication safety problem was weighted to account for the variation in stakeholder group size.

RESULTS

The Delphi study was conducted from January 2015 to May 2015. The total number of participants across the three groups was 166 (tables 1 and 2).

In Round 1 the majority of respondents across the three groups were from Riyadh (n=130, 80.7%). Fifty-two per cent of participants were female (n=84, n=2 missing), and the mean age was 35.4 (SD 11.5) years (table 3). For detailed demographics for each group see online supplementary tables 2, 3 and 4.

Consensus

The total number of items for which consensus was achieved in each group after completion of Rounds 1 and 2 was 53 items in the pharmacy user group, 51 items in the professional group and 43 items in the community pharmacy

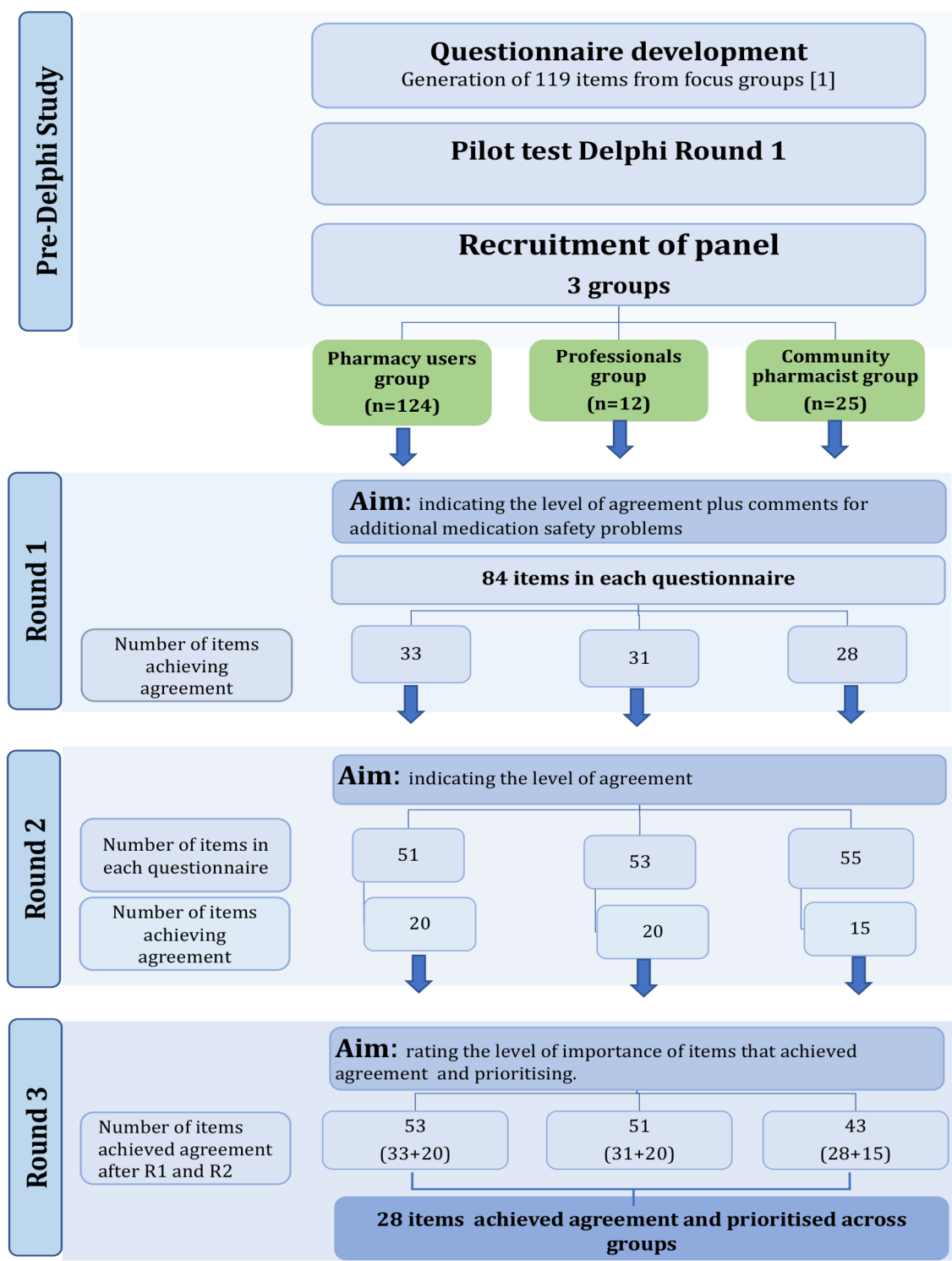


Figure 1 The Delphi process.

group (figure 1). Across the three stakeholder groups consensus was achieved with 28 items. The pharmacy users and professional groups agreed on 41 items (47% of these items were related to external factors). However, community pharmacists achieved the lower levels of consensus on items related to external factors. No items under task factors and medication factors achieved consensus within the community pharmacy group. Table 4 shows items that reached consensus across the stakeholder groups.

Community pharmacists achieved consensus on all factors related to physician and patient behaviour and had the highest percentage of consensus among the three groups for factors related to work, such as high workload and low salaries. However, the pharmacy users group had the largest number of items achieving consensus related to task factors and medication. Professionals attributed problems to lack of coordination between regulators, commercial pressure and lack of enforcement of regulations.

Table 2 Participants' completion rates across three rounds

Round number	Participants completion rate % (n)
R1+R2+R3	61 (102)
R1+R2	8 (13)
R1+R3	5 (9)
R2+R3	0.6 (1)
R1*	22 (37)
R2*	2 (4)
R3*	0
Total number of participants	166

*Responders who only responded to this round.
R1, Round 1; R2, Round 2.

The community pharmacy group was the only group that did not achieve consensus on the general statement 'Medication safety problems in community pharmacies in Saudi Arabia are a major problem' (online supplementary table 5). Medication safety problems that did not achieve consensus and were excluded from Round 3 are available (online supplementary table 6). Five medication safety problems reached more than 70% disagreement (ie, 1 or 2 on the Likert scale) throughout the three rounds by the

community pharmacy group (online supplementary table 7) meaning community pharmacists did not consider these medication safety problems as problems. The professional group also considered one of these items not a medication safety problem: 'poor quality of medication in Saudi Arabia'.

Free text comments from respondents in Round 1 revealed no new themes. Examples of comments were the lack of enforcement of regulations and the lack of clear written Arabic information for patients.

Prioritisation of consensus items

The medication safety problems (28 items) (table 4) for which consensus was achieved across all groups were prioritised in Round 3 (figure 2). The item ranked number one in importance most often across the three groups was 'Pharmacies lacking facilities to provide different services such as counselling and compounding medication'; 58% of all participants ranked it as first. Table 5 shows the items prioritised based on stakeholder group and table 6 according to the HFF. All three groups achieved consensus on the same item under 'communication and information exchange': 'Patients not providing full information about their health condition'. The pharmacy users and the professional group prioritised the same items under the following HFF categories: organisational, work, task, patient behaviour and medication.

Table 3 Demographics of participants in Round 1

Characteristic	Pharmacy users % (n)	Professionals % (n)	Community pharmacists % (n)	Total % (n)
Number of participants R1	124	12	25	161
Gender – female	64 (79)	41.6 (5)	0	52 (84)
Age (years.) mean (SD)	35.8 (12)	37.8 (13.6)	32.4 (7.1)	35.4 (11.5)
Nationality				
Saudi	100 (124)	100 (12)	0	84.4 (136)
Non-Saudi	0	0	100 (25)	15.5 (25)
Highest educational qualification				
High school	13 (16)	0	0	10 (16)
Bachelor's	59 (73)	33 (4)	92 (23)	62 (100)
Master's	19 (24)	42 (5)	8 (2)	19 (31)
PhD	7 (9)	25(3)	0	7 (12)
Geographical distribution				
Central region				
Riyadh	76.7 (95)	83 (10)	100 (25)	80.7 (130)
Al Qassim	10.5 (13)	–	–	8.1 (13)
Hail	1.6 (2)	–	–	1.2 (2)
Eastern region	4.8 (6)	8 (1)	–	4.3 (7)
Western region	2.4 (3)	–	–	1.9 (3)
Northern region	0.8 (1)	–	–	0.6 (1)
Outside Saudi Arabia	2.4 (1)	8 (1)	–	1.2 (2)

Table 4 Medication safety problems which consensus was achieved across stakeholder groups after completing round 1 and 2

Human factors	Statement
External factors	The lack of training programmes, for example, residency programmes, in the undergraduate curriculum for pharmacists. Having multiple healthcare providers for a single patient. Commercial pressure from pharmaceutical companies on prescribing physicians.
Organisational and management factors	The lack of a patient database in community pharmacies in Saudi Arabia. The lack of drug information software resources that help pharmacists retrieve information quickly.
Work factors	Pharmacist long working hours Pharmacies lacking facilities to provide different services such as counselling and compounding medication.
Physician factors	Illegible physicians' handwriting. Physicians prescribing unnecessary medications. The lack of communication between the pharmacist and the prescribing physician to check prescriptions.
Pharmacist factors	The lack of post-registration education for pharmacists.
Communication and information exchange	Patients not requesting information about medication. Patients not providing full information about their health condition. Patients not collecting their medication directly from their community pharmacy, that is, collected by someone else such as their driver, spouse, etc.
Patient behaviour	Patients diagnosing and treating themselves independently of any healthcare professional. Patients using other people's medicine (family and friends) without approval of their physician. Patients not following pharmacists' instructions on using medication. Patients pressuring pharmacists to supply prescription-only medication without a prescription. Patients pressuring physicians to prescribe medication. Lack of patient awareness of medication safety problems. Medication being treated like a commodity in Saudi Arabia.
Patient factors	Patients with long-term conditions. Older patients. Children. Less educated patients. Less educated caregivers, for example, family. Patients using multiple medications. Patients with allergies.

DISCUSSION

In this study a wide range of medication safety problems achieved consensus across the three groups. Medication safety problems were prioritised differently based on stakeholder group (table 5) and human factor category (table 6). The medication safety problem that was ranked highest across all groups was 'Pharmacies lacking facilities to provide different services such as counselling and compounding medication' (figure 2).

The top six prioritised items focused on pharmacy design, communication between pharmacists and physicians, patient databases, pharmacists' continuing education, pharmacists' working hours and unnecessary prescribing. These factors map to the following elements of the HFF: work, team, organisational and pharmacist factors. These have been identified as sociotechnical factors in other studies.²⁻⁴ Harvey *et al*⁸ explained that community pharmacy is a complex environment. Teams of people, processes,

workloads, protocols, pharmacy resources, organisational systems, technical systems and space are involved. In order to understand safety problems, all factors have to be taken into account and the relationships between the teams of people and other components are important in dispensing safely.³

The design of the pharmacy was ranked as the number one priority as a medication safety problem across all groups. The layout of the pharmacy and lack of privacy can mean that it is difficult for patients to engage in conversation and share information with the community pharmacist, and for pharmacists to provide public health services and counselling.³²⁻³⁴ Privacy violations include overhearing conversations, medication being visible at the counter, calling out consumers' names to collect their medication and mentioning medicines by name.³⁵ Pharmacies should be designed to provide full privacy and facilitate counselling in a private, comfortable space, ensuring proper information

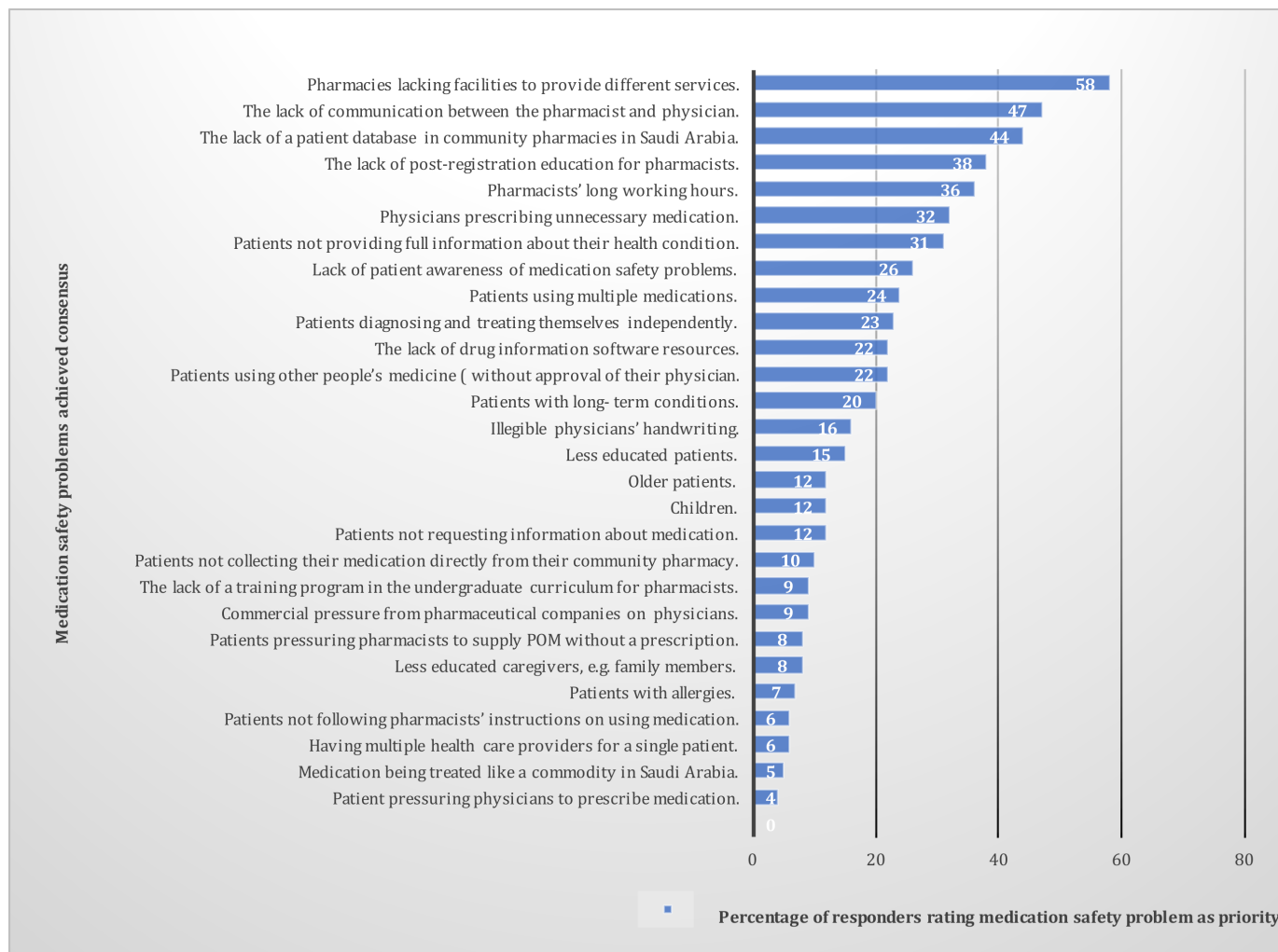


Figure 2 Top ranked medication safety problems across all stakeholder group. POM, prescription only medication.

Table 5 Top five ranked medication safety problems by stakeholder group

Rank	Pharmacy users	Professionals	Community pharmacists
1	Pharmacies lacking facilities to provide different services such as counselling and compounding medication.	Pharmacies lacking facilities to provide different services such as counselling and compounding medication.	The lack of drug information software resources that help pharmacists retrieve information quickly.
2	Lack of community pharmacists adhering to regulations.	Look-alike medication or sound-alike medication, which are medicine brand names that look or sound the same as other medicine brand names when written or spoken.	Pharmacists' long working hours.
3	The lack of communication between the pharmacist and the prescribing physician.	Patients using multiple medications.	Patients not providing full information about their health condition.
4	The lack of a patient database in community pharmacies in Saudi Arabia.	The lack of a patient database in community pharmacies in Saudi Arabia.	The lack of a patient database in community pharmacies in Saudi Arabia.
5	The lack of post-registration education for pharmacists.	The lack of knowledge of community pharmacists.	Commercial pressure from pharmaceutical companies on prescribing physicians.

Table 6 Prioritisation of medication safety problems according to the human factors framework across stakeholder groups

Human factors	Pharmacy users	Professional	Community pharmacists
External factors	Having more than one regulatory body to regulate community pharmacy in Saudi Arabia, for example, Ministry of Health and Saudi Food and Drug Authority.	The lack of enforcement of regulations by the Ministry of Health.	Commercial pressure from pharmaceutical companies on prescribing physicians.
Organisational and management factors	The lack of a patient database in community pharmacies in Saudi Arabia.	The lack of a patient database in community pharmacies in Saudi Arabia.	The lack of drug information software resources that help pharmacists retrieve information quickly.
Work factors	Pharmacies lacking facilities to provide different services such as counselling and compounding medication.	Pharmacies lacking facilities to provide different services such as counselling and compounding medication.	Pharmacists' long working hours.
Physician factors	The lack of communication between the pharmacist and the prescribing physician to check prescriptions.	Physicians prescribing unnecessary medication.	Illegible physicians' handwriting.
Pharmacist factors	The lack of community pharmacists adhering to regulations.	The lack of knowledge of community pharmacists.	The lack of post-registration education for pharmacists.
Task factors	Supplying prescription medication to patients without a prescription.	Supplying prescription medication to patients without a prescription. The lack of proper labelling of medication from medications supplied from community pharmacies.	
Communication and information exchange	Patients not providing full information about their health condition. –	Patients not providing full information about their health condition. The lack of information provided by pharmacists in the form of counselling. The lack of clear, understandable spoken medication information in Arabic provided to patients.	Patients not providing full information about their health condition. –
Patient behaviour	Lack of patient awareness of medication safety problems.	Lack of patient awareness of medication safety problems.	Patients diagnosing and treating themselves independently of any healthcare professional.
Medication	Look-alike medication or sound-alike medication, which are medicine brand names that look or sound the same as other medicine brand names when written or spoken.	Look-alike medication or sound-alike medication, which are medicine brand names that look or sound the same as other medicine brand names when written or spoken.	–
Patient characteristics	Patients with long-term conditions.	Patients using multiple medications.	Older patients.

exchange and the safe supply of medication. Dedicated locations should be available for all services provided, such as vaccinations and other public health services.

Poor physical pharmacy design contributes to other medication safety challenges, such as dispensing errors.^{4 36} Pharmacy layout is an important factor in ensuring a reduction in work stress and interruptions.³⁷ A spaciouly designed pharmacy allows easy movement and workflow, potentially contributing to a reduction in pharmacist stress and dispensing errors.³⁷

An interesting finding of the current study is the seventh item prioritised under the patient factor 'Patients not providing full information about their health condition'. A limited number of studies have identified the context of this behaviour and its impact on patient safety.^{21 22} One possible explanation is that research on medication safety problems in community pharmacy has tended to focus on sociotechnical factors with very limited data on patient behaviour.^{8–10} Further inquiry is needed to understand the reasons for

such behaviour from the viewpoints of pharmacy users, through understanding their attitudes and perceptions towards sharing information with pharmacy personnel.

The community pharmacist group considered five items not to be medication safety problems; 'Generic substitution' was one of the five items, in contrast to the pharmacy users' group and professional who categorised it as a medication safety.

Patient insecurity due to generic substitution was reported as one of the major causes of drug-related problems related to medication supplied by community pharmacies in Germany.³⁸ Further research is needed to understand the attitudes and concerns of pharmacy users to generic medication. Possible reasons identified in an earlier study include worries about medication quality and the pharmacist's knowledge.¹ In addition, research is needed to understand community pharmacists attitudes regarding supplying and counselling generic medication.

Study implications

A number of measures have been taken in Saudi Arabia to ensure the safe supply and use of medication from community pharmacies, such as enforcement of regulations and establishing a national electronic patient database,^{7,8} but further areas for improvements are needed. This study prioritisation exercise could be used as a 'road map' for designing a systematic approach to improving medication safety in community pharmacy in Saudi Arabia. The findings could aid organisations responsible for the regulation of community pharmacy to target key problems and set future research priorities based on stakeholder perspective and human factors categories.

The study supports the use of HFF to understand the medication safety problems in community pharmacy. It would be useful to explore the use of HFF in community pharmacy outside the Saudi context.

Strengths and limitations of this study

The main strength of this study is that it involved representatives of various stakeholders of community pharmacy in defining medication safety problems, achieving consensus and prioritisation of these factors. This has provided comprehensiveness of the medication safety problems evident by no further medication safety problems being identified in the open-ended question asked in Round 1.

The HFF facilitated the categorisation and understanding of the medication safety problems. In addition, it provided theoretical underpinning to this study.³⁹ The use of theory helps to guide research adds context and provides in-depth description, interpretation and explanation.³⁹

Using the option of an online questionnaire helped to minimise missing data and facilitate the speed in administering the questionnaires through the three rounds. The attrition rate in later rounds, which is often a problem in Delphi studies, was very not substantial.⁴⁰

However, there are a number of limitations with this study. First, the use of online questionnaires restricts participation to those who have internet access and computer skills. Second, we used social media to recruit pharmacy users. Saudi Arabia is the country with the highest number of active Twitter users in the Arab region (2.4million users), accounting for more than 40% of the region's active Twitter users.⁴¹ This helped to recruit pharmacy users from different geographical areas in Saudi Arabia, which might increase the chances of generalisability of the results. The snowballing technique and the use of WhatsApp also helped to reach a wider population. Nevertheless, using social media may introduce selection bias.

Third, the majority of responders were from Riyadh city, the capital of Saudi Arabia, where 25% of the Saudi population live.⁴² Although Riyadh residents come from different parts of Saudi Arabia, their views might not be representative of people across Saudi Arabia.

Fourth, the pharmacy user group participants were young adults with Bachelor degrees and their responses may differ from less educated or elderly individuals. However, it worth

noting that 65% of the Saudi population is under the age of 40 years and 23% have college degrees.⁴²

Fifth, a high percentage of pharmacy users chose 'I do not know' during Rounds 1 and 2 possibly as several statements in these two rounds were related to community pharmacy regulations.

Finally, unequal proportion of participants through the three rounds in each stakeholder group. Pharmacy users were over-represented (n=124) while only 12 'professionals' participated. Different sampling techniques was used for each group. We used convenient sampling to recruit 37 professional and only 12 responded. Low participation rates may have been due to time constraints and work pressures.

As for the pharmacy user group, previous experience with flyers and notices in community centres and community pharmacies showed low response rate so we used social media to recruit.¹ There was a high number of respondents exceeding our expectations of only 25 and we decided not to exclude.

Stakeholder responses were treated equally through all three rounds, but the final ranking of the medication safety problem was weighted to account for the variation in stakeholder group size.

CONCLUSION

This study identified the medication safety priorities affecting current community pharmacy practice among three stakeholder groups in Saudi Arabia. The lack of facilities to provide different services, such as counselling, was the most important problem agreed by all three groups, followed by the failure of communication between physicians and community pharmacists, and the lack of a patient database in community pharmacy. Each stakeholder group had different perspectives on medication safety, demonstrating the importance of exploring and including different stakeholder perspectives on topics of such importance.

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Patient consent for publication Obtained.

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